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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/815,815	03/23/2001	Robin Millard	1194KH-05	6698
7590 11/10/2003				
Charles D. Gunter, Jr. BRACEWELL & PATTERSON, LLP 201 Main Street, Suite 1600 Fort Worth, TX 76102				
EXAMINER CONLEY, SEAN E				
ART UNIT		PAPER NUMBER		
1744				

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/815,815

Applicant(s)

MILLARD, ROBIN

Examiner

Sean E Conley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/23/01 and 2/21/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Great Britain on March 25, 2000. It is noted, however, that applicant has not filed a certified copy of GB 0007246.2 as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 2 recites the broad recitation

"the pasteurizing temperature is maintained for less than 8 hours", and the claim also recites "preferably less than 6 hours, more preferably for about 4 hours" which is the narrower statement of the range/limitation.

4. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 1, recites "similar organic sludge" which is considered to be vague because the use of the term "similar" is indefinite.

Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for implementing the use of alternative expressions and phraseology in the claim language which cause the claims, and all of the claims which depend therefrom, to be indefinite. Therefore, the implementation of these alternatively expressed elements, which are not considered to be basic equivalents, cause the issue of uncertainty to be raised with respect to the intended scope of the claim language.

Claim 1, line 1 recites "sewage sludge or similar organic sludge".

Claims 1, 3-5 and 9-12 recite limitations which are not considered to be provided with a proper antecedent basis, as follows"

Claim 1, line 3, "the exothermic reaction",

Claim 1, lines 4-5, "the exothermic heat",

Claim 3, lines 1-2, "the product",

Claim 4, lines 1-2, "the product",

Claim 5, lines 1-2, "the product",

Claim 9, line 2, "the product",

Claim 9, lines 1-2, "the steps of mixing, filling, drying and discharging",

Claim 10, line 1, "the mixing and filling",

Claim 11, line 1, "the drying" and

Claim 12, line 1, "the discharging."

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Fergen (U.S. Pat. 5,385,673).

Fergen discloses a method of treating wastewater sludge. The method comprises mixing an alkaline material with the sludge which results in a temperature increase due to a series of exothermic reactions. The exothermic reactions release heat in the form of heat of neutralization and heat of base hydration. Also, the pH of the sludge mixture is raised to above 12. The pH of 12 or higher is well documented as being effective in the reduction of indicator bacteria as well as viruses. The mixture is then placed within a reactor vessel where the temperature of the mixture increases to

above 55 degrees C due to the series of exothermic reactions. The sludge is maintained in the reactor vessel for at least 2 hours at a temperature above 55 degrees C, and at a pH of at or above 12 standard units in order to sterilize and dry the mixture. After processing in the reactor vessel, the material can be immediately utilized as a high nutrient value biosolid. Additionally, the material may be dewatered to a higher percent solids either by external heat or by evaporation resulting from the heat generated by the exothermic reaction (see column 3, lines 1-22 and column 5, lines 1-11). Fergen teaches that it is known to mix sludge with an alkaline material in order to raise the pH to at least 12 and also generate heat at a temperature of at least 55 degrees C for a period of time of at least 2 hours in order to pasteurize the sludge. Furthermore, this reference teaches that the step of drying occurs when the heat generated by the exothermic reaction causes evaporation of the material.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
9. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham (U.S. Pat. 5,853,590) in view of Fergen (U.S. Pat. 5,385,675).

Burnham discloses a method for treating organic sludges in which a dewatered sludge cake and an alkaline admixture are mixed and then dried under pasteurization conditions which utilizes heat from an exothermic reaction resulting from the addition of the alkaline mixture to the dewatered sludge cake. This exothermic reaction assists in the drying of the moisture from the sludge mixture to produce a product with a dry solids content of between 55 and 60%. Additionally, it is disclosed that by mixing the sludge with an alkaline admixture, the pH of the sludge mixture is raised to above 12.0. The sludge is then dried by subjecting the sludge mixture to a heat of 52 degrees C or above for a time dependent upon the temperature achieved. For example at a temperature of 70 degrees C the sludge would need to be held for 30 minutes, while at a temperature of 52 degrees C the sludge would have to be held for 12 hours. The exact time for determining the length of the heat pasteurization step taught by the formula present on the 40 CFR part 503 regulation of 1993 (see column 5, lines 7-42; column 6, lines 22-43 and column 8, lines 27-47).

Fergen discloses a method of treating wastewater sludge. The method comprises mixing an alkaline material with the sludge which results in a temperature increase due to a series of exothermic reactions. The exothermic reactions release heat in the form of heat of neutralization and heat of base hydration. Also, the pH of

the sludge mixture is raised to above 12. The pH of 12 or higher is well documented as being effective in the reduction of indicator bacteria as well as viruses. The mixture is then placed within a reactor vessel where the temperature of the mixture increases to above 55 degrees C due to the series of exothermic reactions. The sludge is maintained in the reactor vessel for at least 2 hours at a temperature above 55 degrees C, and at a pH of at or above 12 standard units. Additionally, the material may be dewatered to a higher percent solids either by external heat or by evaporation resulting from the heat generated by the exothermic reaction (see column 3, lines 1-22 and column 5, lines 1-11). This reference has been relied upon to teach that it is known to mix sludge with an alkaline material in order to raise the pH to at least 12 and generate heat at a temperature of at least 55 degrees C for a period of time of at least 2 hours in order to pasteurize the sludge. Furthermore, the reference has been relied upon to teach that the step of drying occurs when the heat generated by the exothermic reaction causes evaporation of the material.

In conclusion, Burnham teaches that it is known to maintain pasteurization conditions by mixing with the sludge an alkaline admixture in order to raise the pH of the sludge to above 12 and also generate heat above 52 degrees C for a period of time sufficient to treat the sludge. Additionally, Burnham teaches that the higher the temperature, the shorter the period of time that is required for pasteurization. However, Burnham does not *specifically* disclose maintaining both the pH above 12 and the pasteurization temperature for a period of time less than 10 hours.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of Burnham and maintain the pH at or above 12 and also maintain a pasteurization temperature of at least 55 degrees C for less than 10 hours as taught by the method of Fergen, in order to process the sludge in a shorter period of time. Furthermore, it would have been obvious to combine the drying step with the pasteurization step as taught by the invention of Fergen in order to decrease the length of the process.

Additionally, it would have been obvious to one having ordinary skill in the art at the time the invention was made to calculate a sufficient period of time for pasteurization, based upon the pasteurization temperature achieved by the exothermic reaction and the pH above 12, using the formula presented in 40 CFR part 503 regulation of 1993 as taught by Burnham.

10. Claims 7, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham in view of Fergen as applied to claim 1 above, and further in view of Lynam et al. (U.S. pat. 5,279,637).

The inventions of Burnham and Fergen do not provide a cycling of the processed dewatered sludge or the determination of the moisture content of the sludge and alkaline mixture.

The invention of Lynam et al. presents a method of treating organic sludges in which dewatered sludge is processed with an alkaline mixture (see column 11, lines 59-65) and is then subjected to a pasteurization process. Lynam et al. further provides a

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moisture analyzer 90 which includes a transducer, controlled by a microprocessor 40, for monitoring and sensing the moisture content of the processed dewatered sludge, wherein the processed sludge is recycled or delivered to another location in response to the moisture content (see column 10, lines 21-28 and column 18, lines 3-17).

In regards to claim 7, it would have been obvious to one of ordinary skill in the art to modify the invention of Burnham to include a moisture measuring transducer, as taught by the patent of Lynam et al., for the purpose of measuring the moisture content of the dewatered sludge and determining if the moisture content of the processed sludge was in a predetermined range for the purpose of producing a sludge product with an acceptable percentage of dry solids content.

With regards to claims 9-12, the applicant has claimed that the various steps of the process for treating sewage sludge, and combinations thereof, which are to be performed within a specified number of hours. The applicant's disclosure does not teach any criticality or unexpected results which would be obtained by implementing the recited steps as set forth in claims 9-12. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented each of the various steps of the applicant's sludge treatment process within a given quantity of time for the purpose of producing a regulated volume of the final sludge product.

11. Claims 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham in view of Fergen as applied to claim 1 above, and further in view of Wurtz (U.S. Pat. 5,196,043).

Burnham and Fergen do not teach drying the sludge in a FIFO hopper.

Wurtz discloses a method of treating sewage sludge by mixing the sludge with an alkaline material in order to cause an exothermic reaction which generates high heat. The high heat that is generated sterilizes the sludge and instantly dries the mixture through evaporation of liquids, dramatically, changing the appearance of the product so that it meets the requirements for beneficial use of waste materials (see column 1, lines 19-33). After the sludge is mixed with the alkaline material in a blender the mixture is sent to a holding hopper 3 via connection 9, wherein the exothermic reaction and drying occurs. The hopper 3 is vented and also has a discharge section 6. A rotary lock feeder discharges the reacted, free flowing product from the hopper. The resultant product 11 is continuously discharged from the hopper as a free flowing, off white powder or granule (see column 8, lines 39-60 and column 9, lines 19-26).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify the method of Burnham and replace the drying means with a FIFO hopper in order to dry the sludge and continuously discharge the sludge for further use. Additionally, it is well within the level of skill in the art to repeat the step of drying the mixture in a hopper in order to achieve a desired dry solids content in the treated product.

Double Patenting

12. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11

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F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

13. Claims 1-12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 and 27-30 of U.S. Patent No. 6,237,246 B1 in view of Fergen (U.S. Pat. 5,385,673).

The claims of U.S. Pat. 6,237,246 B1 do not recite the steps of maintaining a pasteurization temperature for less than 10 hours, more preferably for about 4 hours at a pH of at least 12, the pH of the mixture being maintained at 12 or above for less than a day.

Fergen discloses a method of treating wastewater sludge. The method comprises mixing an alkaline material with the sludge which results in a temperature increase due to a series of exothermic reactions. The exothermic reactions release heat in the form of heat of neutralization and heat of base hydration. Also, the pH of the sludge mixture is raised to above 12. The pH of 12 or higher is well documented as being effective in the reduction of indicator bacteria as well as viruses. The mixture is then placed within a reactor vessel where the temperature of the mixture increases to above 55 degrees C due to the series of exothermic reactions. The sludge is maintained in the reactor vessel for at least 2 hours at a temperature above 55 degrees

C, and at a pH of at or above 12 standard units. Additionally, the material may be dewatered to a higher percent solids either by external heat or by evaporation resulting from the heat generated by the exothermic reaction (see column 3, lines 1-22 and column 5, lines 1-11). This reference has been relied upon to teach that it is known to mix sludge with an alkaline material in order to raise the pH to at least 12 and generate heat at a temperature of at least 55 degrees C for a period of time of at least 2 hours in order to pasteurize the sludge. Furthermore, the reference has been relied upon to teach that the step of drying occurs when the heat generated by the exothermic reaction causes evaporation of the material.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of U.S. Pat. 6,237,246 and include the steps of maintaining the pH at or above 12 and also maintaining a pasteurization temperature of at least 55 degrees C for less than 10 hours as taught by the method of Fergen, in order to process and dry the sludge in a shorter period of time.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Conley, whose telephone number is (703) 305-2430. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Robert Warden, can be reached at (703) 308-2920. The Unofficial fax

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phone number for this group is (703) 305-7719. The Official fax phone number for this Group is (703) 872-9310. The direct fax number to the examiner is (703)-746-8859.

When filing a FAX in Technology Center 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of the application. This will expedite the processing of your papers.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [robert.warden@uspto.gov]. All Internet e-mail communications will be made of record in the application file. PTO employees will not communicate with applicant via internet e-mail where sensitive data will be exchanged or where there exists a possibility that sensitive data could be identified unless there is of record express waiver of the confidentiality requirements under 35 U.S.C. 122 by the applicant. See the Interim Internet Usage Policy published by the Patent and Trademark Office Official Gazette on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist, whose telephone number is (703) 308-0661.

SEC

Ac

October 23, 2003

Robert J. Warden, Jr.